Species At Risk Act: Critical Habitat Issues for Marine Species

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Abstract
Canada's imminent Species at Risk Act (SARA) requires that "critical habitat" be defined and protected for endangered and threatened-listed species. "Critical" habitat for some marine species may be relatively well defined (e.g. estuarine species), but many widely-distributed nearshore listed species (e.g. northern abalone, sea otters, etc.) occur now, or have occurred in the past, at countless places over much of the coastal region, with specific concentrations presumably determined by topography-bathymetry, substrate, and predator occurrence / food availability. Whether any specific large section of shoreline is more important, or critical, than others as habitat for any specific species is debatable. For such widely distributed species, relevant management/conservation questions may focus more around 1) the overall percentage of the coast that merits particular conservation (dependent on objectives) for a given species, and 2) its optimal spatial pattern of distribution (e.g., source populations, occurrence in existing protected areas, above-average areas of abundance, proximity to fisheries, etc.) so as to include adequate local species concentrations.

Here, we present an approach that we believe can help address the issues presented above. Species-unique rules re habitat suitability may determine areas of localised species concentrations, and these rules may be deduced and assessed by comparing model predictions using various hypothesised rules against actual observations of a species' micro-distribution where its known. To ensure transparency and consistency, and to avoid duplication of effort by different researchers, the overall database to which such rules would be applied should be common to researchers working on all coastal species. It would contain both relevant existing physical (shoreline shape, bathymetry, depth, substrate, currents, wave exposure, etc.) and biological (geo-referenced densities and abundances, seasonal occurrence, etc.) data for study species, and as much as practical, their predators and food sources. This common DFO database should incorporate research, fishery-dependent and local ecological knowledge (LEK), and by definition, will be an evolving, dynamic entity.

In addition, we summarise the deliberations of a Critical Habitat Workshop to address these issues that took place in early 2003.

Canada's *Species at Risk Act* (SARA) (SARA 2002) was passed by Parliament in December 2002 and is expected to be given Royal Assent to become law sometime in 2003. This Act was developed to prevent species extinctions and to provide opportunity for the recovery of abundance of species presently at threat of extinction (Figure 1). "Critical" habitat is a term that to date has often been used synonymously with "important" habitat, but in the context of the forthcoming Act, it has a very specific meaning. Critical habitat in SARA means "that habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species" (Sec. 2). Relevant considerations relating to this topic are:

1. There is broad species coverage among Committee on the Status of Endangered Wildlife in Canada (COSEWIC)-listed species: whales (large and small), salmon, sturgeon, freshwater spp., sea turtles, abalone, etc.
2. Relationships between abundance of a species and habitat use vary because of variable species' mobility, possible previous shrinkage of distribution ranges, and the possibility of source-sink populations.

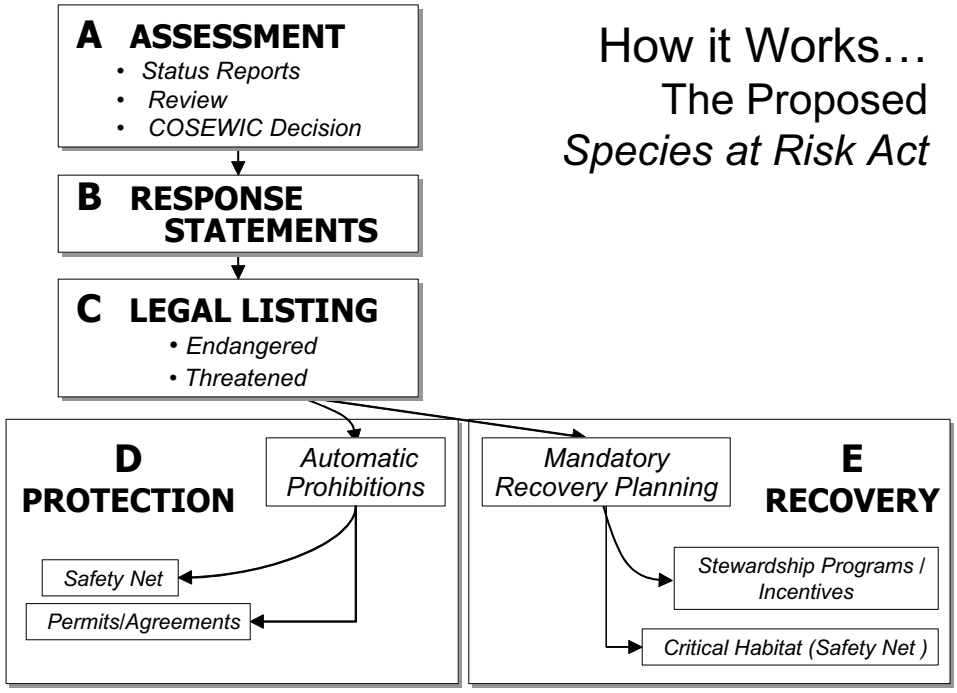

Figure 1. A schematic diagram of the species conservation steps in SARA.

3. There is a need to evaluate how to assess habitat requirements under fluctuating population conditions, e.g., is more habitat needed under poorer population conditions, perhaps because the species has been eliminated from better, more productive habitats for it, to achieve species recovery?
4. Community and multispecies issues: are there potential tradeoffs between species listed as extirpated, endangered or threatened, i.e. what recovery plan actions that may be good of one species may be not-so-good for another. Potentially conflicting habitat requirements for currently listed species are salmon vs. white sturgeon, and sea otters vs. northern abalone. Conversely, can critical habitat protection for one species help others?

For some marine species, important habitat may be relatively well defined (e.g. bottlenecks, estuarine species), but for many widely-distributed nearshore listed species (e.g. northern abalone, sea otters, etc.) that occur now, or have occurred in the past, at countless places over much of the coastal region, the challenge will be to define whether some spatial areas are more important than others. In SARA, "habitat" for aquatic species is defined consistent with the Fisheries Act (Sec. 2), i.e. "fish habitat means spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes".

SARA (Sec. 41) states that each species' recovery strategy "must… include an identification of the species' critical habitat, to the extent possible, based on the best available information…"; and "a schedule of studies to identify critical habitat, where available information is inadequate". Sec. 49 states that each "action plan" must include "an identification of the species' critical habitat, to the extent possible, based on the best available information…";"a statement of the measures that are proposed to be taken to protect the species' critical habitat"; and "an identification of any portions of the species' critical habitat that have not been protected".

With respect to timelines, the identified Competent Minister , i.e. (*a*) the Minister of Canadian Heritage with respect to individuals in or on federal lands that are administered by that Minister and that are national parks, national historic sites or other protected heritage areas as those expressions are defined in subsection 2(1) of the Parks Canada Agency Act; or (b) the Minister of Fisheries and Oceans with respect to aquatic species, other than individuals mentioned in paragraph (a) (Sec. 2), must include a proposed recovery strategy in the public registry within one year of legal listing for ENDANGERED species, and within two years for THREATENED or EXTIRPATED species. The recovery strategy must also include a statement on when one or more action plans will be developed. There are no mandated timelines for action plans except as above.

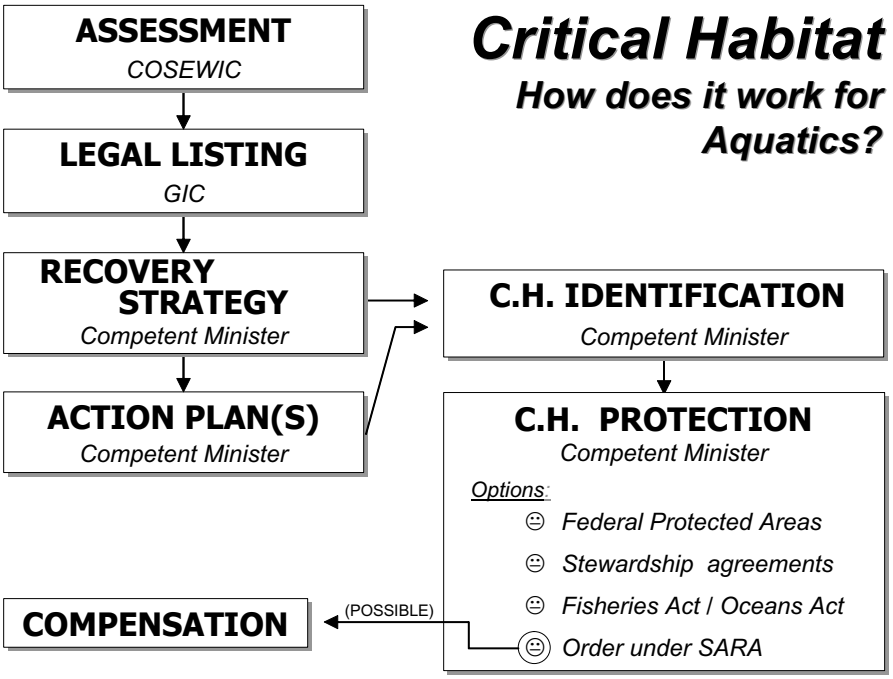

Figure 2. A schematic diagram of the steps if identifying critical habitat for marine or aquatic species through SARA.

Concerning actual critical habitat protection, the general objective is to ensure that critical habitat in federal jurisdiction is protected within 180 days after being identified in a recovery strategy or action plan (Sec. 57). "No person shall destroy" is the operative clause (Sec. 58). There is mandatory protection for critical habitat under federal jurisdiction (Sec. 58), and for federal protected areas, the Competent Minister must publish a description of critical habitat within 90 days, and protect it within another 90 days. For aquatic species (Figure 2), the Competent Minister must formally report on how protection is being achieved, or make an order to protect this habitat. Protection can be achieved via agreement, or under another act.

An important consideration is that The Competent Minister may provide compensation for losses suffered as a result of extraordinary impact of application of critical habitat protection provisions (Sec. 64). The expectation is that government will gain experience on this topic before developing detailed guidelines on compensation procedures. This clause implies potentially large financial implications, and so it should be expected that other Acts will be used to ensure critical habitat protection whenever possible. This issue is somewhat complicated for aquatic species and situations, given pre-existing *Fisheries Act* provisions, and it reinforces the need for rigour in identifying critical habitat.

Habitat terminology differs between the *Fisheries Act* and SARA, with the former using the words "works and undertakings" and "harmful alteration, degradation, and destruction." SARA uses the words "activities" and "destroy," respectively.

Critical habitat identification considerations are that identifications may be controversial, and there will likely be pressure from various interest groups to identify more or less. However, the phrase "to the extent possible" provides some flexibility in identifications. Also, although this is essentially a science issue, appropriate standards to be followed might ultimately be defined in the courts. All this demands that science deliberations will have to be rigorous, documented, and peer-reviewed.

Other references to critical habitat in SARA are:

1. Destruction of residences of EXTIRPATED, ENDANGERED, and THREATENED species is prohibited (Sec. 33)

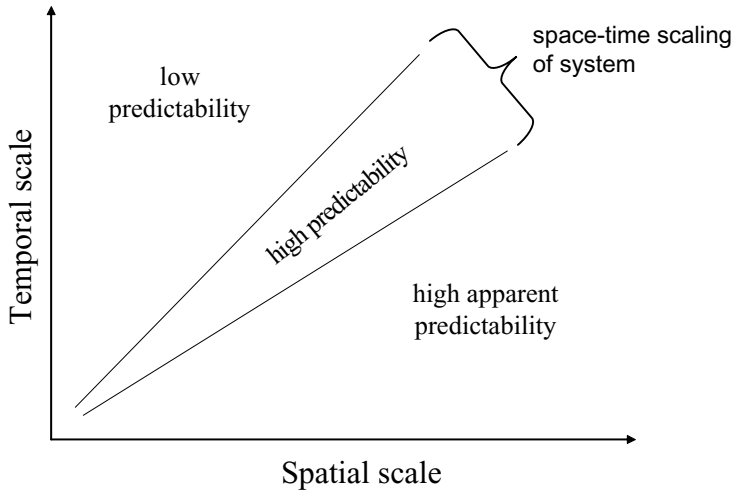

Figure 3. The relationship between space, time and the utility of data in predictions (after Wiens 1989).

   a. Residence means "a dwelling-place, such as a nest, den or other similar area or place, that is occupied or habitually occupied….." (long description).
   b. This is essentially an adjunct to species protection.
2. Recovery strategies must identify threats to survival of species, including loss of habitat, and strategies to address them (Sec. 41).

With respect to marine or aquatic species, data that will be necessary to quantitatively describe "critical habitat" include spatial ranges and distributions, preferably collected over a period of time, and any historical data that can provide a context or baseline for the species recent history. Such data should be at the best resolutions available, as it is always easier to aggregate higher resolution data than to disaggregate lower resolution data. In some cases, species-habitat relationships will be necessary to fully define critical habitat. Obvious marine drivers for these models include bathymetry (depth, slope, complexity, canyons, sea mounts, etc.), remotely sensed data to obtain broad spatial coverage (e.g. temperature, salinity, primary production, ocean height, etc.), and current patterns (e.g., long term means, annual deviations, fronts, gyres, etc.).

The challenges associated with such data are:

1. Data resolution is typically study specific, and spatial and temporal scaling changes data requirements and data availability (Figure 3).
2. The sharing of common databases is often logistically difficult (e.g., How will it be funded and managed? How can consistent use of data be achieved?).
3. Technical details associated with data set maintenance and analyses can be significant (e.g., map resolutions, projections, etc.).
4. Interpretation of results may require a value-based approach (development of a common currency) to address integrated management issues.

There are also issues related to user sophistication level and the interpretation of results. Over-interpretation of spatial results has to be guarded against (e.g., maps of "resource inventories" based on harvest data are often effort biased), results of predictive models depend on the parameters and assumptions used, and integrated management deals with an array of issues (resources, species, employment, etc.).

Potential "Important Habitat" and "Critical Habitat" identification strategies are to: compile historical, existing and anecdotal information into a spatial database; use models to derive "Important Habitat" locations based on physical and biological criteria; initiate new surveys and assessments to refine identification of "Important Habitat" locations and their potential changes over time; and initiate analyses to evaluate Critical Habitat identification options. Potential data sources

are federal, provincial, and municipal agencies; community groups; First Nations; etc. Workshops may provide anecdotal local ecological knowledge information. In general, efforts should build on existing data compilations, such as Coastal Resource Atlas information

In summary, the reality is that issues relating to Critical Habitat are a key part of SARA, and its implementation will be highly visible; critical habitat is legally defined in the context of recovery strategies or action plans; the Competent Minister is accountable, but a high level of consultation will occur; and that high scientific definition standards for critical habitat will be required, including rigorous peer-review processes and clear explanations of deliberations that identify critical habitat.

References

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